

FIG. 1. Role of Members of the Serpin Superfamily

Serpin	Abbreviation ⁱ	Role ⁱⁱ	Primary function/target	Reference	Species ⁱⁱⁱ
α_1 -Antichymotrypsin	ACT	In	chymotrypsin	a	M
α_1 -Antitrypsin	AAT	In	elastase	b	M/Am
α_2 -Antiplasmin	A2AP	In	plasmin	c	M
	<i>Acp76A</i>	O	<i>reproductive system</i>	d	<i>dme</i>
<i>Accessory gland protein</i>					
Angiotensinogen	ANGT	O	non-inhibitory, hormone precursor	e,f	M
Antithrombin	ANT	In/O	thrombin, factor Xa, anti-angiogenesis	g,h	M/F
Blood fluke serpins	Ac	N	inhibitory RCL, target unknown. <i>Schistosoma haematobium</i> major antigen	i	<i>sma/ja/ha</i>
Bomapin	Bomapin	In	inhibitory activity vs serine proteinases	j	<i>hsa</i>
<i>Bombyx mori</i> serpins	Ac	In, N	inhibitory activity vs serine proteinases	k	<i>bmo</i>
C1 inhibitor	C1-I	In	complement C1 esterase	l	M
Corticosteroid-binding globulin	CBG	O	non-inhibitory, hormone binding	m	M/Am
Factor Xa-directed anticoagulant	Ac	In	reversible noncovalent factor Xa inhibition	n	<i>aae</i>
Glia-derived nexin	GDN	O/In	neurite outgrowth, thrombin	o	M
Heat shock protein 47	HSP47	O	chaperone, folding, collagen processing	p	M/F
Heparin cofactor II	HEPII	In	thrombin/chymotrypsin	q,r	M/Am
Kallistatin	KAL	In	tissue kallikrein	s	M
Limulus intracellular coagulation inhibitor	LICI	In	factor C, limulus clotting enzyme, other serine proteases	t	<i>ttr</i>
<i>Manduca sexta</i> alaserpin (12 splice variants)	SERP-1	In, N	some show inhibitory activity vs serine proteinases	u	<i>mse</i>
Maspin	Maspin	In	tissue-type plasminogen activator/prevents metastasis	v,w	M
Monocyte/neutrophil elastase inhibitor	MNEI	In	proteinase 3, cathepsin G	x	M
Myeloid and erythroid nuclear-termination stage specific protein	MENT	O	chromatin condensation	y	<i>gga</i>
Nematode	Ac	N	many with inhibitory RCL, targets unknown	z	<i>cel</i>
Neuroserpin	NEUS	In	plasminogen activator, urokinase, plasmin	aa	M
Ovalbumin	OVAL	N	non-inhibitory	bb,cc	A
PI6	PI6	In	cathepsin G	dd	M
P18	P18	In	trypsin-like proteinases	ee,ff	<i>hsa</i>
P19	P19	In	granzyme B	gg	M
Pigment epithelium-derived factor	PEDF	O	neurotrophic factor	hh	M
Plant serpins (e.g., protein Z)	Ac	In	inhibitory activity vs serine proteinase, target unknown	ii,jj	P
Plasminogen Activator Inhibitor-1	PAI-1	In	tissue-type plasminogen activator	kk	M

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Plasminogen Activator Inhibitor-2	PAI-2	In	tissue-type plasminogen activator, intracellular signaling	ll,mm	M
Protein C Inhibitor	PCI	In	protein C	nn	M
Regeneration-Associated Protein	RASP-1	In	liver regeneration, human homolog protein Z potent FXa inhibitor	oo	<i>rno</i>
Sea lamprey serpin	Ac	N	inhibitory RCL, target unknown	pp	<i>pma</i>
Signal crayfish	Ac	N	inhibitory RCL, target unknown	qq	<i>ple</i>
Squamous Cell Carcinoma Antigen-1	SCCA-1	In	inhibitory activity vs papain-like cysteine proteases	rr	<i>hsa</i>
Squamous Cell Carcinoma Antigen-2	SCCA-2	In	inhibitory activity vs serine proteinases	ss	M
Thyroxine-binding globulin	TBG	O	non-inhibitory, hormone binding	tt	M/Am
TP55	Megsin	O	megakaryocyte maturation	uu	<i>hsa</i>
Uterine milk protein	UTMP	In/O	activin binding, inhibitory activity vs aspartic proteases	vv,ww	M
Viral serpin CmA	CmA	In	interleukin-converting enzyme 1 β	xx	V
Ovine uterine serpine	OvUS	O	immunosuppressive properties	yy	

ⁱ (Ac) Identified by its individual accession.

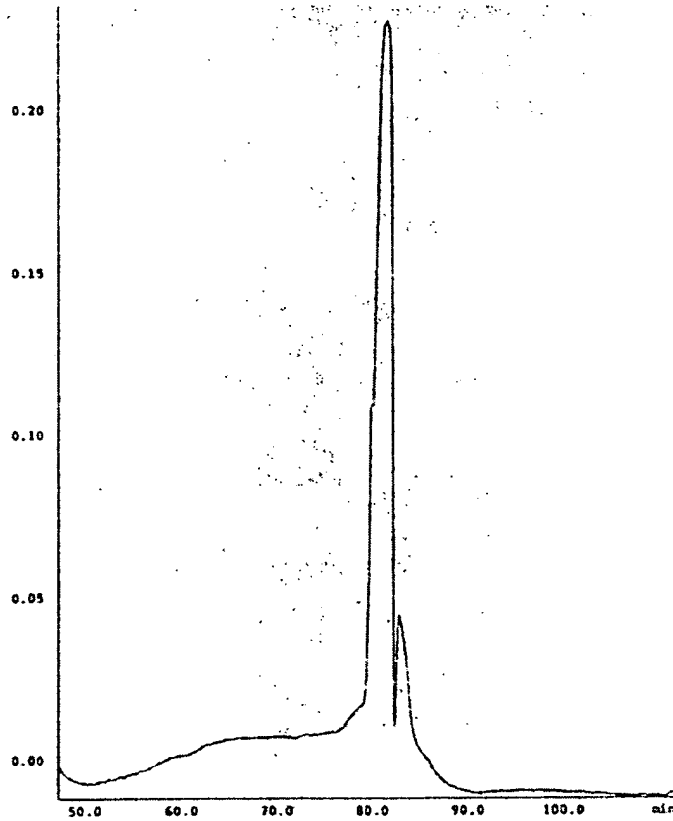
ⁱⁱ (In) Protease inhibitor; (O) other function; (N) not known.

ⁱⁱⁱ Where sequences are present in more than one species, the class is given. (A) avian; (Am) amphibian; (F) fish; (M) mammalian; (P) plant; (V) viral. Italicized labels refer to individual species: (*aae*) *Aedes aegypti*; (*bmo*) *Bombyx mori*; (*cel*) *Caenorhabditis elegans*; (*dme*) *Drosophila melanogaster*; (*gga*) *Gallus gallus*; (*hsa*) *Homo sapiens*; (*mse*) *Manduca sexta*; (*ple*) *Pacifastacus leniusculus*; (*pma*) *Petromyzon marinus*; (*rno*) *Rattus norvegicus*; (*sma/ja/ha*). *Schistosoma mansoni*, *Schistosoma japonicum*, *Schistosoma haematobium*; (*ttr*) *Tachypleus tridentatus*.

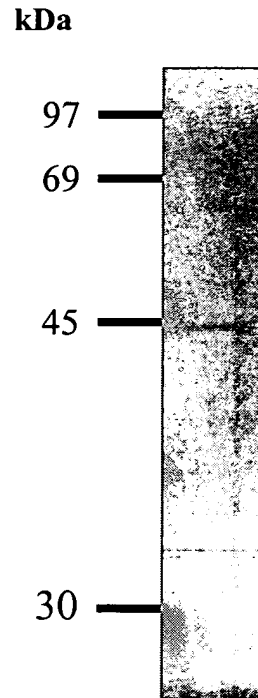
^aKalsheker 1996 (review); ^bPatterson 1991 (review); ^cHolmes et al. 1987; ^dWolfner et al. 1997; ^eStein et al. 1989; ^fArakawa et al. 1965; ^gO'Reilly et al. 1999; ^hLane et al. 1992 (review); ⁱBlanton et al. 1994; ^jRiewald and Schleef 1995; ^kSasaki 1991; ^lZeerleder et al. 1999 (review); ^mPemberton et al. 1988; ⁿStark and James 1998; ^oZurn et al. 1988; ^pNakai et al. 1992; ^qTollefsen et al. 1982; ^rChurch et al. 1985; ^sWang et al. 1989; ^tMiura et al. 1994; ^uJiang and Kanost 1997; ^vSheng et al. 1998; ^wZou et al. 1994; ^xSugimori et al. 1995; ^yGrigoryev et al. 1992; ^zWhisstock et al. 1999; ^{aa}Krueger et al. 1997; ^{bb}Wright 1984; ^{cc}Stein et al. 1989; ^{dd}Scott et al. 1999a; ^{ee}Sprecher et al. 1995; ^{ff}Dahlen et al. 1998; ^{gg}Bird et al. 1998; ^{hh}Steele et al. 1993; ⁱⁱLundgard and Svensson 1989; ^{jj}Rasmussen et al. 1996; ^{kk}Reilly et al. 1994 (review); ^{ll}Dickinson et al. 1998; ^{mm}Astedt et al. 1998 (review); ⁿⁿSuzuki et al. 1983; ^{oo}New et al. 1996; ^{pp}Robson et al. 1998; ^{qq}Liang and Soderhall 1995; ^{rr}Schick et al. 1998; ^{ss}Schick et al. 1998; ^{tt}Pemberton et al. 1988; ^{uu}Tsujimoto et al. 1997; ^{vv}McFarlane et al. 1992; ^{ww}Mathialagan and Hansen 1996; ^{xx}Ray et al. 1992; ^{yy}Peltier et al. 2000.

FIG. 2

A.



B.



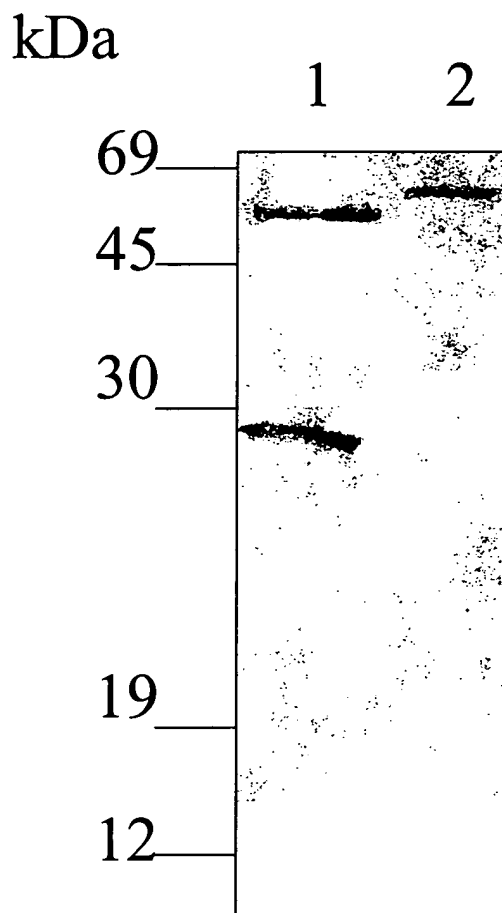
C.

HRSPVEDVCTAKPR DIPVNPMTIYR SSEKKATEGQGSEQKIPGATNR RVW
 ELSKANSHFATAFYQHLADSK NNNDNIFLSPLSISTAFAMTK LGACNNTL
 TQLMEVFK FDTISEKTS DQIHFFFAK LNCRLYRKANK SSELVSANR LFGD
 KSITFNETYQDISEVVYGA LQPLDFKGNAEQSR LTINQWISNKTEGRIT
 DVIPPQAINFTVLVLVNTIYFKGLWKS FSPENTRKELFYK ADGESCSV
 LMMYQESKFYR RVAESTQVLELPFKGDD ITMVLILPKLEKTLAKVEQEL
 TPDMLQEWLDELTTLLVVHMPR FRIEDSFSVKEQLQDMGLEDLFSPE KS
 RLPGIVAEGRS DLYVSDAFHKAFLEVNEEGSEAAASTVISIAGR SLNSDR
 VTFKANRPFLVLIR EVALNTIIFMGR VANPCVD

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FIG. 3

A.



B.

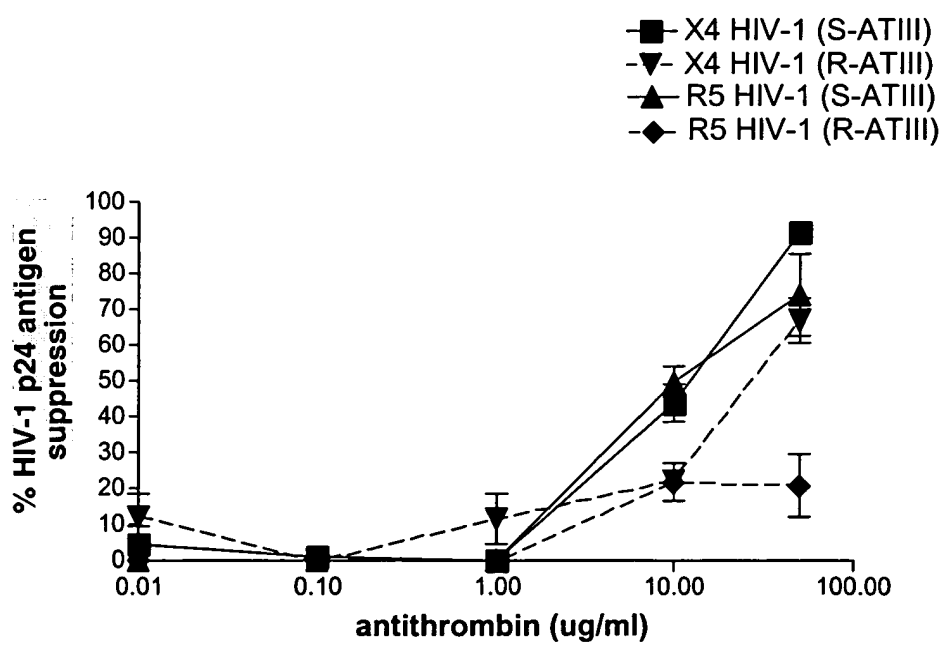
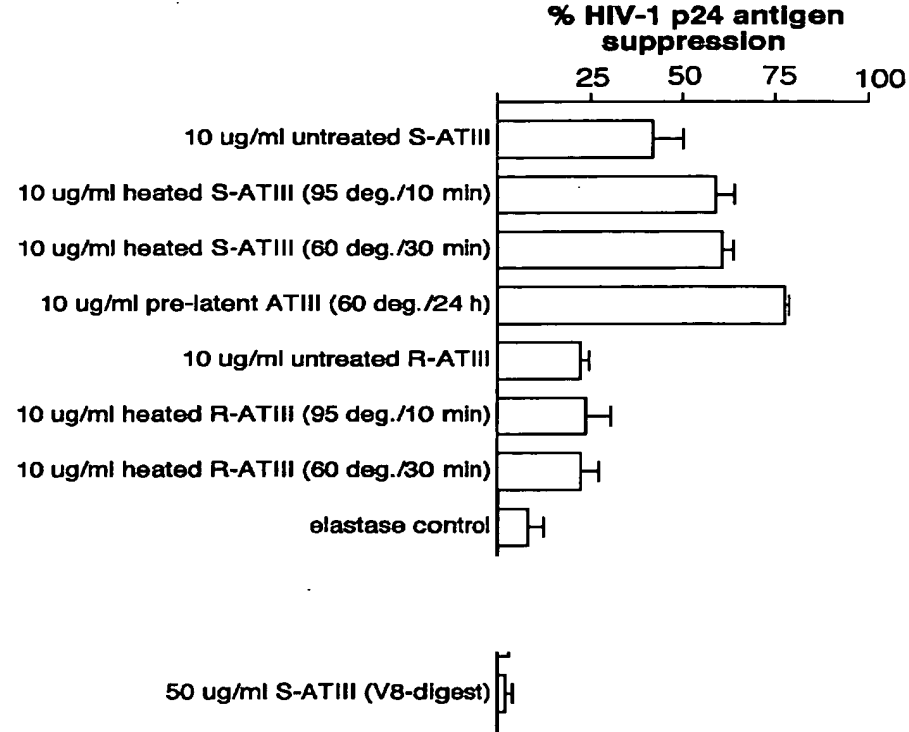


FIG. 4

A.



B.

